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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/765,929	01/29/2004	Toshiaki Aono	Q79636	2659

23373 7590 02/01/2007  
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WASHINGTON, DC 20037

EXAMINER
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MARTIN, LAURA E

ART UNIT	PAPER NUMBER
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2853

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/01/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

23/

<b>Office Action Summary</b>	<b>Application No.</b> 10/765,929	<b>Applicant(s)</b> AONO ET AL.	
	<b>Examiner</b> Laura E. Martin	<b>Art Unit</b> 2853	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 12 December 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-34 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-34 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

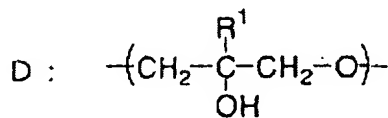
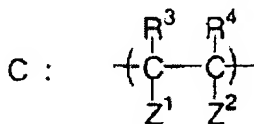
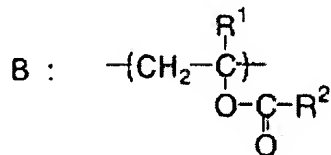
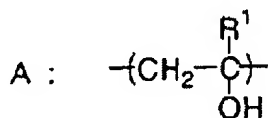
### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 2, 5, 9, 23 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shibahara (US 5753422) in view of Ishizuka et al. (JP 2001181548).

Shibahara teaches compound represented by the following general formula (I):  $R-X-(Y)_n-H$ , wherein the general formula (I), R represents a hydrophobic group, or a group derived from a hydrophobic polymer; n is an integer from 10 to 3500 (claims 9 and 13); and structural units of repeated Y comprise at least one structural unit represented by A, C, or D, and further comprise 0-40% by mole of structural units represented by B:



wherein in structural units A through D,  $R^1$  represents a hydrogen atom or an alkyl group having 1 to 6 carbon atoms;  $R^2$  represents a hydrogen atom or an alkyl

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group having 1 to 10 carbon atoms;  $R^3$  represents a hydrogen atom or a methyl group;  $R^4$  represents a hydrogen atom,  $-CH_3$ ,  $-CH_2COOH$ , or an ammonium salt thereof or an alkali metal salt thereof or  $-CN$ ;  $Z^1$  (X) represents a hydrogen atom,  $-COOH$ , or an ammonium salt thereof or alkali metal salt thereof, or  $-CONH_2$ ; and  $Z^2$  (Y) represents  $-COOH$  or an ammonium salt thereof or alkali metal salt thereof,  $SO_3H$  or an ammonium salt thereof or alkali metal salt thereof,  $-OSO_3H$  or an ammonium salt thereof or alkali metal salt thereof,  $-CH_2SO_3H$  or an ammonium salt thereof or alkali metal thereof,  $-CONHC(CH_3)_2CH_2SO_3H$  or an ammonium salt thereof or alkali metal salt thereof, or  $-CONHCH_2CH_2CH_2N^+(CH_3)_3Cl^-$  (Shibahara discloses a silver halide column 12, lines 10-68, column 4, lines 1-10, and column 19, lines 30-38); further comprising water (column 7, lines 46-55).

Shibahara does not teach colored fine particles including an oil-soluble dye and an oil-soluble polymer, wherein the oil soluble polymer has a dissociable group, begin at least one of a carboxyl group or a sulfonic acid group, in an amount of 0.2 to 4.0 mmol/g, the colored fine particles being prepared by adding to an aqueous phase an organic phase including the oil-soluble dye, selected from the group consisting of an anthraquinone dye, naphthoquinone dye, styryl dye, indoaniline dye, azo dye, nitro dye, coumarin dye methane dye, porphyrin dye, azaporphyrin dye, and phthalocyanine dye, and the oil-soluble polymer, and emulsifying and dispersing a resultant mixture, and the ink having a viscosity of 30 mPa\*s.

Ishizuka et al. teaches colored fine particles including an oil-soluble dye and an oil-soluble polymer (abstract), wherein the oil soluble polymer has a dissociable group,

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begin at least one of a carboxyl group or a sulfonic acid group, in an amount of 0.2 to 4.0 mmol/g [0011], the colored fine particles being prepared by adding to an aqueous phase an organic phase including the oil-soluble dye [0059], selected from the group consisting of an anthraquinone dye, naphthoquinone dye, styryl dye, indoaniline dye, azo dye, nitro dye, coumarin dye methane dye, porphyrin dye, azaporphyrin dye, and phthalocyanine dye [0008-0009], and the oil-soluble polymer, and emulsifying and dispersing a resultant mixture [0059], and the ink having a viscosity of 30 mPa\*s [0086]. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention of Shibahara with the disclosure of Ishizuka et al. in order to create a more stable ink for printing.

Claims 3, 4, 10-19, 21, and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shibahara (US 5753422) and Ishizuka et al. (JP 2001181548), and further in view of Kubodera (JP 10-095942).

Shibahara as modified discloses the ink taught in claim 1; however it does not disclose a hydrophobic group represented by R in general formula (I) is an aliphatic group or an aromatic group, alicyclic group, is selected from the group consisting of alkyl, alkenyl, alkynyl, phenyl, and naphthyl groups; a hydrophobic group represented by R in general formula (I) is an alkyl group having 3 to 70 carbon atoms wherein polymerization degree of R in the general formula (I) is from 2 to 500; R is a group derived from at least one hydrophobic polymer selected from the group consisting of

polystyrene, polymethacrylic acid ester, polyacrylic acid ester, polyvinyl chloride, and derivatives thereof; a structural unit A is a structural unit derived from vinyl alcohol,  $\alpha$ -methylvinyl alcohol or  $\alpha$ -propylvinyl alcohol; a structural unit B is a structural unit derived from vinyl acetate, vinyl formate, vinyl propionate, or an  $\alpha$ -substitution product thereof; a structural unit C is a structural unit derived from acrylic acid, methacrylic acid, itaconic acid, maleic acid, an ammonium salt thereof or a metal salt thereof; a mass ratio of R to  $(Y)_n$  in general formula (I) is from 0.01 to 2, the mass ratio being calculated using atomic weights of respective atoms in R to  $(Y)_n$ ;  $(Y)_n$  comprises, as structural units thereof, ethylene, propylene, isobutene, acrylonitrile, acrylamide, methacrylamide, N-vinylpyrrolidone, vinyl chloride, or vinyl fluoride.

Kubodera teaches the hydrophobic group represented by R in general formula (I) is an aliphatic group or an aromatic group, alicyclic group, is selected from the group consisting of alkyl, alkenyl, alkynyl, phenyl, and naphthyl groups [0030]. Kubodera also teaches the hydrophobic group represented by R in general formula (I) is an alkyl group having 3 to 70 carbon atoms [0031] wherein polymerization degree of R in the general formula (I) is from 2 to 500 [0032]; R is a group derived from at least one hydrophobic polymer selected from the group consisting of polystyrene, polymethacrylic acid ester, polyacrylic acid ester, polyvinyl chloride, and derivatives thereof [0032]. Kubodera also teaches the structural unit A is a structural unit derived from vinyl alcohol,  $\alpha$ -methylvinyl alcohol or  $\alpha$ -propylvinyl alcohol [0043]; the structural unit B is a structural unit derived from vinyl acetate, vinyl formate, vinyl propionate, or an  $\alpha$ -substitution product thereof

[0043]; the structural unit C is a structural unit derived from acrylic acid, methacrylic acid, itaconic acid, maleic acid, an ammonium salt thereof or a metal salt thereof [0043]. Kubodera also teaches a mass ratio of R to  $(Y)_n$  in general formula (I) is from 0.01 to 2, the mass ratio being calculated using atomic weights of respective atoms in R to  $(Y)_n$  [0048];  $(Y)_n$  comprises, as structural units thereof, ethylene, propylene, isobutene, acrylonitrile, acrylamide, methacrylamide, N-vinylpyrrolidone, vinyl chloride, or vinyl fluoride [0046]. Kubodera also teaches the ink further comprising water [0073].

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the ink taught by Shibahara as modified with the disclosure of Kubodera in order to provide a more stable ink.

Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shibahara (US 5753422) and Ishizuka et al. (JP 2001181548) in further view of Yabuki et al. (US 20020067399).

Shibahara as modified teach the ink of claim 1; however, it does not disclose the ink wherein the oil soluble dye is contained in an amount of 0.5-50% by mass based on a total mass of the ink or wherein the oil soluble polymer is contained in an amount of 10-500% by mass based on a mass of the oil soluble dye.

Yabuki et al. teaches the ink wherein the oil soluble dye is contained in an amount of 0.5-50% by mass based on a total mass of the ink [0070] or wherein the oil

soluble polymer is contained in an amount of 10-500% by mass based on a mass of the oil soluble dye [0199].

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the ink taught by Shibahara as modified with the disclosure of Yabuki et al. in order to create a more stable ink composition.

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shibahara (US 5753422) and Ishizuka et al. (JP 2001181548) in further view of Ishizuka et al. (US 2002088294).

Shibahara as modified teach the ink of claim 1; however, none disclose the compound represented by formula (I) contained in an amount of 1 to 50 % by mass based on a mass of colored fine particles.

Ishizuka et al. (294) teaches the compound represented by formula (I) contained in an amount of 1 to 50 % by mass based on a mass of colored fine particles (abstract).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the ink taught by Shibahara as modified with the disclosure of Ishizuka et al. (294) in order to create a more stable ink composition.

Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shibahara (US 5753422) and Ishizuka et al. (JP 2001181548) in further view of Leppard et al. (US 60480660).



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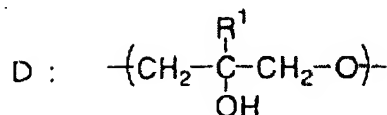
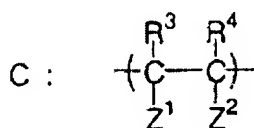
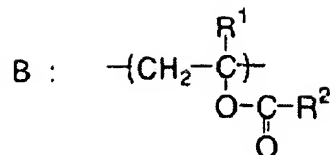
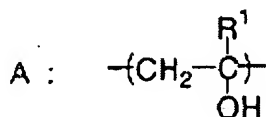
Shibahara as modified teach the ink of claim 1; however, it does not teach a structural unit D selected from the group consisting of  $-\text{CH}_2\text{CH}(\text{OH})\text{CH}_2\text{O}-$ ,  $-\text{CH}_2\text{C}(\text{CH}_3)(\text{OH})\text{CH}_2\text{O}-$ , and  $-\text{CH}_2\text{C}(\text{C}_2\text{H}_5)(\text{OH})\text{CH}_2\text{O}-$ .

Leppard et al. teaches a structural unit D selected from the group consisting of  $-\text{CH}_2\text{CH}(\text{OH})\text{CH}_2\text{O}-$ ,  $-\text{CH}_2\text{C}(\text{CH}_3)(\text{OH})\text{CH}_2\text{O}-$ , and  $-\text{CH}_2\text{C}(\text{C}_2\text{H}_5)(\text{OH})\text{CH}_2\text{O}-$  (C2, L54).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the ink taught by Shibahara as modified with the disclosure of Leppard et al. in order to provide for a stable ink composition.

Claims 25, 27, 29 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shibahara (US 5753422) in view of Ito et al. (US 6509125).

Shibahara teaches compound represented by the following general formula (I):  $\text{R-X-(Y)}_n\text{-H}$ , wherein the general formula (I), R represents a hydrophobic group, or a group derived from a hydrophobic polymer; n is an integer from 10 to 3500 (claims 9 and 13); and structural units of repeated Y comprise at least one structural unit represented by A, C, or D, and further comprise 0-40% by mole of structural units represented by B:



wherein in structural units A through D, R<sup>1</sup> represents a hydrogen atom or an alkyl group having 1 to 6 carbon atoms; R<sup>2</sup> represents a hydrogen atom or an alkyl group having 1 to 10 carbon atoms; R<sup>3</sup> represents a hydrogen atom or a methyl group; R<sup>4</sup> represents a hydrogen atom, -CH<sub>3</sub>, -CH<sub>2</sub>COOH, or an ammonium salt thereof or an alkali metal salt thereof or -CN; Z<sup>1</sup> (X) represents a hydrogen atom, -COOH, or an ammonium salt thereof or alkali metal salt thereof, or -CONH<sub>2</sub>; and Z<sup>2</sup> (Y) represents -COOH or an ammonium salt thereof or alkali metal salt thereof, SO<sub>3</sub>H or an ammonium salt thereof or alkali metal salt thereof, -OSO<sub>3</sub>H or an ammonium salt thereof or alkali metal salt thereof, -CH<sub>2</sub>SO<sub>3</sub>H or an ammonium salt thereof or alkali metal thereof, -CONHC(CH<sub>3</sub>)<sub>2</sub>CH<sub>2</sub>SO<sub>3</sub>H or an ammonium salt thereof or alkali metal salt thereof, or -CONHCH<sub>2</sub>CH<sub>2</sub>CH<sub>2</sub>N<sup>+</sup>(CH<sub>3</sub>)<sub>3</sub>Cl<sup>-</sup> (Shibahara discloses a silver halide column 12, lines 10-68, column 4, lines 1-10, and column 19, lines 30-38).

Shibahara does not teach colored fine particles including an oil-soluble dye and a photopolymerizable monomer, selected from the group consisting of an anthraquinone dye, naphthoquinone dye, styryl dye, indoaniline dye, azo dye, nitro dye, coumarin dye

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methane dye, porphyrin dye, azaporphyrin dye, and phthalocyanine dye and a hydrophobic group is an aliphatic group, an aromatic group, or an alicyclic group.

Ito et al. teaches colored fine particles including an oil-soluble dye (C2, L25-36) and a photopolymerizable monomer (C13, L48-60), selected from the group consisting of an anthraquinone dye, naphthoquinone dye, styryl dye, indoaniline dye, azo dye, nitro dye, coumarin dye methane dye, porphyrin dye, azaporphyrin dye, and phthalocyanine dye (column 3, lines 4-6) and phthalocyanine dye and a hydrophobic group is an aliphatic group, an aromatic group, or an alicyclic group (column 11, line 65-column 12, line 57).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention of Shibahara with the disclosure of Ishizuka et al. in order to create a more stable ink for printing.

Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shibahara (US 5753422) and Ito et al. (US 6509125), and further in view of Kubodera.

Shibahara as modified discloses the ink taught in claim 25; however it does not disclose R is a group derived from at least one hydrophobic polymer selected from the group consisting of polystyrene, polymethacrylic acid ester, polyacrylic acid ester, polyvinyl chloride, and derivatives thereof.

Kubodera teaches R is a group derived from at least one hydrophobic polymer selected from the group consisting of polystyrene, polymethacrylic acid ester, polyacrylic acid ester, polyvinyl chloride, and derivatives thereof [0032].

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the ink taught by Shibahara as modified with the disclosure of Kubodera in order to provide a higher quality ink.

Claims 26 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shibahara (US 5753422) and Ito et al. (US 6509125) in further view of Ishizuka et al. (US 2001181548).

Shibahara as modified teach the ink of claim 1; however, it does not teach the colored fine particles are prepared by adding to an aqueous phase an organic phase including oil-soluble dye, and emulsifying and dispersing a resultant mixture and the oil-soluble polymer, and emulsifying and dispersing a resultant mixture, and the ink having a viscosity of 30 mPa\*s.

Ishizuka et al. teaches the colored fine particles are prepared by adding to an aqueous phase an organic phase including oil-soluble dye, and emulsifying and dispersing a resultant mixture [0059], and the ink having a viscosity of 30 mPa\*s [0086].

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the ink taught by Shibahara as modified with the disclosure of Ishizuka et al. in order to provide a more stable ink composition.

Claims 30 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shibahara (US 5753422) and Ito et al. (US 6509125) in further view of Yabuki et al. (US 20020067399).

Shibahara as modified teach the ink of claim 1; however, it does not disclose the ink wherein the oil soluble dye is contained in an amount of 0.5-50% by mass based on a total mass of the ink or wherein the oil soluble polymer is contained in an amount of 10-500% by mass based on a mass of the oil soluble dye.

Yabuki et al. teaches the ink wherein the oil soluble dye is contained in an amount of 0.5-50% by mass based on a total mass of the ink [0070] or wherein the oil soluble polymer is contained in an amount of 10-500% by mass based on a mass of the oil soluble dye [0199].

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the ink taught by Shibahara as modified with that of Yabuki et al. in order to create a more stable ink composition.

Claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shibahara (US 5753422) and Ito et al. (US 6509125) in further view of Ishizuka et al. (US 2002088294).

Shibahara as modified teach the ink of claim 1; however, it does not disclose the compound represented by formula (I) contained in an amount of 1 to 50 % by mass based on a mass of colored fine particles.

Ishizuka et al. teaches the compound represented by formula (I) contained in an amount of 1 to 50 % by mass based on a mass of colored fine particles (abstract).

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It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the disclosures of Shibahara as modified with that of Ishizuka et al. in order to create a more stable ink composition.

### ***Response to Arguments***

Applicant's arguments with respect to claims 1-34 have been considered but are moot in view of the new ground(s) of rejection.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Laura E. Martin whose telephone number is (571) 272-2160. The examiner can normally be reached on Monday - Friday, 7:00 - 3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen D. Meier can be reached on (571) 272-2149. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Laura E. Martin

 1/30/07  
MANISH S. SHAH  
PRIMARY EXAMINER